

WHAT IS CLAIMED IS

1. A cold plate with vortex generator having a inlet and a outlet defined by flowing directions of fluid respectively, comprising:
 - a base having a groove that has a first end and a second end, the first end
5 of the groove is connected to the inlet and the second end of the groove is connected to the outlet;
 - a plate installed on the base; and
 - at least one vortex generator mounted on a surface of the plate toward the groove of the base.
- 10 2. The cold plate with vortex generator as recited in claim 1, wherein the vortex generator is formed by two unparallel and symmetrical ribs, one end of the unparallel ribs is a contraction end with a shorter gap, another end is an expansion end with a longer gap, coolant can pass through the gap between ribs, due to each rib having a sharp portion, an appearance
15 of the rib is a triangle geometric figure.
3. The cold plate with vortex generator as recited in claim 2, wherein the sharp portion is on a central of the rib to make the rib an isosceles triangle.
4. The cold plate with vortex generator as recited in claim 2, wherein the
20 sharp portion is on a side of the rib to make the rib a right triangle.
5. The cold plate with vortex generator as recited in claim 4, wherein the sharp portion is on the contraction end of the ribs.
6. The cold plate with vortex generator as recited in claim 4, wherein the sharp portion is on the expansion end of the ribs.
- 25 7. The cold plate with vortex generator as recited in claim 1, wherein the inlet and the outlet for fluid are on the plate, the inlet is connected externally to an input tube for inputting fluid, and the outlet is connected to externally an output tube for outputting fluid.
- 30 8. The cold plate with vortex generator as recited in claim 1, wherein the vortex generator is mounted on the cold plate and comprise two pairs of unparallel and symmetrical ribs protruding out of the plate, one expansion end of the two pairs of the ribs is installed corresponding to another.

9. A cold plate with vortex generator comprising:

a body having an inlet, an outlet and a curved tunnel for flowing fluid, a first end of the tunnel is connected to the inlet and a second end of the tunnel is connected to the outlet; and

5 at least one vortex generator mounted on a surface of the tunnel.

10. The cold plate with vortex generator as recited in claim 9, wherein two unparallel and symmetrical ribs form the vortex generator, one end of the unparallel ribs is a contraction end with a shorter gap, another end is an expansion end with a longer gap, coolant can pass through the gap
10 between the ribs, due to each rib having a sharp portion, an appearance of the rib is a triangle geometric figure.

11. The cold plate with vortex generator as recited in claim 10, wherein the sharp portion is on a central of the rib to make the rib an isosceles triangle.

15 12. The cold plate with vortex generator as recited in claim 10, wherein the sharp portion is on a side of the rib to make the rib a right triangle.

13. The cold plate with vortex generator as recited in claim 12, wherein the sharp portion is on the contraction end of the ribs.

20 14. The cold plate with vortex generator as recited in claim 12, wherein the sharp portion is on the expansion end of the ribs.

15. The cold plate with vortex generator as recited in claim 9, wherein the inlet is connected externally to an input tube for inputting fluid, and the outlet is connected externally to an output tube for outputting fluid.

25 16. The cold plate with vortex generator as recited in claim 9, wherein the vortex generator is mounted on the cold plate and comprise two pairs of unparallel and symmetrical ribs protruding out of the body, one expansion end of the two pairs of the ribs is installed corresponding to another.

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